CLAIMS:

What is claimed is:

1. A method for assigning processors to partitions in a multi-processor data processing system, the method comprising:

generating optimal allocation sets for unallocated processors in the multi-processor data processing system for a cache level, wherein each set includes an allocation of unallocated processors to at least one partition;

determining whether a set in the optimal allocation sets match requirements for a set of partitions selected for the data processing system; and

responsive to a match existing, removing processors in the set from the unallocated processors, wherein cache usage by the processors is optimized for the cache level.

2. The method of claim 1 further comprising:

repeating the generating step, the determining step, and the removing step is performed for each cache level.

3. The method of claim 2, wherein the method starts at a highest cache level and moves to successively lower cache levels until all cache levels have been processed.

4. The method of claim 1 further comprising:

removing a partition from the set of partitions in response to allocating a set to the partition.

5. The method of claim 1, wherein the multi-processor data processing system is a symmetric multi-processor data processing system.

6. The method of claim 1, wherein the multi-processor data processing system includes an L3 cache and an L2 cache.

7. The method of claim 1, wherein the processors are located on multi-chip modules in which optimal allocations of the processors to partitions to optimize cache usage depends on a location of the processors on the multi-chip modules.

8. A method for allocating processors to optimize cache usage in a multi-processor data processing system, the method comprising:

selecting a highest cache level that has been unprocessed in the multi-processor data processing system;

generating a set of processor allocations having a desired level of cache optimization, wherein the set includes unallocated processors;

responsive to the generating step, determining whether the set matches a requirement for partitions within the set of partitions;

responsive to a match, allocating processors in the set to the partitions to form allocated processors; and

responsive to an absence of the match, repeating the generating set to generate a different set of processor allocations.

9. A data processing system for assigning processors to partitions in a multi-processor data processing system, the data processing system comprising:

a bus system;

a communications unit connected to the bus system;

a memory connected to the bus system, wherein the memory includes a set of instructions; and

a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to generate optimal allocation sets for unallocated processors in the multi-processor data processing system for a cache level, in which each set includes an allocation of unallocated processors to at least one partition; determine whether a set in the optimal allocation sets match requirements for a set of partitions selected for the data processing system; responsive to a match existing, remove processors in the set from the unallocated processors, in which cache usage by the processors is optimized for the cache level.

10. A data processing system for assigning processors to partitions in a multi-processor data processing system, the data processing system comprising:

generating means for generating optimal allocation sets for unallocated processors in the multi-processor data processing system for a cache level, wherein each

set includes an allocation of unallocated processors to at least one partition;

determining means for determining whether a set in the optimal allocation sets match requirements for a set of partitions selected for the data processing system; and

removing means, responsive to a match existing, for removing processors in the set from the unallocated processors, wherein cache usage by the processors is optimized for the cache level.

11. The data processing system of claim 10 further comprising:

repeating the generating means, the determining means, and the removing means is performed for each cache level.

12. The data processing system of claim 11, wherein the method starts at a highest cache level and moves to successively lower cache levels until all cache levels have been processed.

13. The data processing system of claim 10, wherein the removing means is a first removing means further comprising:

second removing means for a partition from the set of partitions in response to allocating a set to the partition.

14. The data processing system of claim 10, wherein the multi-processor data processing system is a symmetric multi-processor data processing system.

15. The data processing system of claim 10, wherein the multi-processor data processing system includes an L3 cache and an L2 cache.

16. The data processing system of claim 10, wherein the processors are located on multi-chip modules in which optimal allocations of the processors to partitions to optimize cache usage depends on a location of the processors on the multi-chip modules.

17. A computer program product in a computer readable medium for assigning processors to partitions in a multi-processor data processing system, the computer program product comprising:

first instructions for generating optimal allocation sets for unallocated processors in the multi-processor data processing system for a cache level, wherein each set includes an allocation of unallocated processors to at least one partition;

second instructions for determining whether a set in the optimal allocation sets match requirements for a set of partitions selected for the data processing system;

third instructions, responsive to a match existing, for removing processors in the set from the unallocated processors, wherein cache usage by the processors is optimized for the cache level.

18. The computer program product of claim 17 further comprising:

fourth instructions for repeating the generating step, the determining step, and the removing step is performed for each cache level.

19. The computer program product of claim 18, wherein the method starts at a highest cache level and moves to successively lower cache levels until all cache levels have been processed.

20. The computer program product of claim 17 further comprising:

sub-instructions for removing a partition from the set of partitions in response to allocating a set to the partition.

21. The computer program product of claim 17, wherein the multi-processor data processing system is a symmetric multi-processor data processing system.

22. The computer program product of claim 17, wherein the multi-processor data processing system includes an L3 cache and an L2 cache.

23. The computer program product of claim 17, wherein the processors are located on multi-chip modules in which optimal allocations of the processors to partitions to optimize cache usage depends on a location of the processors on the multi-chip modules.